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NOTES ON ANIMAL AND PLANT LIFE IN THE VEDDA COUNTRY.

By FREDERICK LEWIS, F.L.S.

(*With one map.*)

THE locality to which these notes apply represents the whole of the Maha Wedirata, the eastern half of the Buttala-Wedirata, and the southern half of the Panawa Pattu of the Eastern Province. 131

This large extent of country falls within part of Uva from the Monaragala range eastwards, and, as indicated above, part of the Eastern Province, or more specifically within the following rough boundaries. Starting from the conspicuous needle-pointed mountain called Wadinagala on the north, it follows the provincial limits of the Eastern Province to the point where it crosses the Government cart road from Potuvil to Muppane. From that point the road to Muppane is adopted as far as Potuvil, from thence following the sea-coast to Kumuna on the banks of the Kumbukkan river.

Next the Kumbukkan river is followed to a point called Kebilitte, at the foot of the imposing mass of rock shown on the Admiralty charts as "Chimney Hill." From here, a line drawn to Sirigala and thence to Wadinagala encloses the whole.

Within this area there is only one perennial river—the Kumbukkan-aar, which forms the southern limit of the region in question. The next largest stream is the Heda-oya, which in the north-east monsoon is a wide and formidable river. To the north the Lankiya-oya is an important stream, which is supplemented by several considerable branches that after uniting with it form a great branch of the Namal-oya. 133

The Govindu-oya, rising on the east flank of the "Westminster Abbey," forms a useful branch of the Karandi-oya that drains the eastern half of the Maha Wedirata country.

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133 while the Wila-oya and Kulapan-oya convey the waters from the eastern limits of the Buttala-Wedirata to the sea through the Panawa Pattu.

The chief mountains are Wadinagala (2,414 ft.), "Westminster Abbey" (1,830 ft.), Degalhella, Nilgala, Hibitalanagala, Kiripokunagala, "Chimney Hill," and Obbekota in the Monaragala range.

Most of these mountains rise abruptly from the plains below, and terminate in high masses of rock. There are, in some cases—particularly on the summit of "Westminster Abbey"—small patches of vegetation, but in the majority the summits of the more conspicuous hills are bare. The country described, therefore, may, broadly speaking, be considered as flat, broken by a few low undulations, the whole being dotted over irregularly with abrupt mountainous masses of rock.

132 The rainfall of this area is comparatively low, and probably does not exceed an average of 60 inches for the year, nearly the whole of which falls in the north-east monsoon, thus involving a period of extreme drought during the south-west monsoon, when for months there is not a drop of rain, followed by torrential showers of variable intensity and uneven distribution.

I am indebted to Mr. Balfour, the Director of Irrigation, for the details of rainfall at Ampari and Rotawewa,* well outside the area I refer to, and to the Surveyor-General† for the same particulars at Monaragala, these being given in tabular form in the Appendix.

137 As might be anticipated from such variation and extreme, it would follow that the vegetation of the country embraced must be, for the most part, what is called dry-zone flora, but other influences have to be considered in relation to distribution. These may be considered as being affected—

(*a*) By influence of streams rising in high altitudes, or in moister regions;
(*b*) By the operations of human beings;
(*c*) By animal transport of seed;
(*d*) By wind action.

* Appendix A. † Appendix B.

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Before passing to a brief detailed investigation of the influences roughly classified as above, it may not be out of place to examine the historical records that apply to the area at the moment under consideration. Thus, we find Arugam Bay corresponds to Mardi, or Morduli Portus, in the time of Ptolemy. Okanda Bay is the same as Bocana—as the sound nearly implies; Kumuna, according to the Sanskrit, is the same as Gonagramuka; while the Kumbukkan river appears in Ptolemy's time to have been called Baracus fluvius.

From this it may be inferred that at least two bays on our eastern coast, south of Batticaloa, were known to the Romans, in addition to the perennial Kumbukkan-aar, and it may be deduced with probable certainty that these bays were ports of call, while the Kumbukkan river was more than likely to have been well known as being the one spot on the east coast where fresh water could always be obtained in both monsoons, for trading boats of light draught.

From this circumstance alone it is probable that the traders of the Roman period had dealings at Kumuna, while Okanda and Arugam Bays both offered a safe anchorage to the traders' vessels.

The whole of the Panawa Pattu from a point south of Komari was included in the region called in Sanskrit times Lambakarna, which, according to Pliny and Ptolemy's map, covered Bocani, of which Bocana (= Okanda) was the port.

Passing to more modern maps, we find about 1681 Knox gives Pottin for Pottuvil; Coemena for Kumuna; and Konokan-aar for the Kumbukkan, showing that these places had, up to that time, sufficient importance to find their recognition in maps of the day. Knox, moreover, distinctly shows Pannoa or Panova Regnum, implying that that part of the country was under a sovereign at that time, insignificant though he may have been.

This evidence, however, which might be elaborated but for pressure on the space of this Paper, points to the definite conclusion that for a considerable period a large extent of our eastern coast was well known, even to the traders of the western world, and we must anticipate, therefore, that in the course of that trade there would be an exchange of

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175 commodities which would produce both directly and indirectly its effect upon local plant life, either by the introduction of species of economic value, or by the direct export of woods found at hand.

137 In support of this it is noticeable that to the north-west of Pottuvil, Palu (*Mimusops luxandra*) and Satinwood (*Chloroxylon swietenia*) are comparatively abundant, as contrasted with the scarcity of the same species on the banks of the Kumbukkan river. Again, while Mi (*Bassia longifolia*) is abundant on the Kumbukkan, it may be called rare west of Pottuvil. As this last-named is an introduction of great value, it was spared where it existed near towns, but was neglected in those localities where the population had no permanent settlement, as we find is the case with the majority of the Maha Wedirata "villages" of the present day, and it is only in some places of old establishment that we find the Mi tree now.

361 The present population is very much scattered, its distribution being undoubtedly governed by the presence or absence of water; hence it will be found that the so-called villages are at considerable distances apart, and only where a supply of water can be got, however small or impure, all the year round. On the other hand, one finds the example of an unpopulated area bounded by a perennial stream, as in the case of the valley of the Kumbukkan river for the last thirty miles of its course. Here, however, we have the instance of a stream that rises to an enormous flood that inundates the country to a depth of many feet on both its banks, thus drowning out, in the wet season, any annual cultivation, and leaving the place parched and dry during the periods of drought—two factors sufficient to keep back a people unprepared to establish strong measures to secure permanent occupation.

Nor is this all. The Kumbukkan river, after it passes the foot of the isolated mass of the Monaragala hills, enters a country that afforded the Veddas their best hunting ground, and the Veddas appear in their early history to have been a race of people who depended almost entirely on the chase, using for their dwellings the rudest shelters of caves and temporary branch huts. They had no inducement to build

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houses of lasting character, as neither their instincts nor habits necessitated such procedure. 361

At Kumuna alone we find a modification of these conditions, in that the greater part of the land where the village stood is above flood level, and possessed of constant fresh water all the year round, besides being at a spot where there was a prospect of trade.

It should be added that all the many anicuts on this river between Kumuna and Kebilitte bear silent testimony to the violence of the floods on the river, and to the once existence of a large population, that probably vanished as soon as these engineering works were destroyed—a population who could enjoy the benefit of the river's floodings by diverting the water into immense tanks, that now are but park-like pieces of jungle. 172

The present inhabitants of the region embraced within the boundaries recorded here are unquestionably of mixed origin, as it is easy to trace on the western limits the pure Sinhalese type of feature, these fading again to a more specific type through the Maha Wedirata, and again changing markedly on the north-east of that country, till it is practically replaced by Tamils in the Panawa Pattu. Thus, it would seem that the Vedda type lay between the Uvan Sinhalese on the west and the Tamil on the east, with the result that frequently one would hear men, while asserting that they were pure Sinhalese, conversing with each other in Tamil. This I found to be actually the case at Bowela, where the villagers insisted that they were of the Goigama caste. 101 162

I was completely baffled in my attempts to secure a vocabulary of Vedda words, though I offered liberal payment for a few lessons in that language. I was pointed out men who were able to speak Vedda, and it was arranged that we should meet, in secret, at a definite time, and at a fixed spot, but when the time came I was told the men had gone away to find stray cattle, or some other equally trumped-up story. 197 198

One night I camped close to some huts in the village of Wattegama, and after my lamp had been put out and I was supposed to be asleep, I heard an animated discussion in the nearest hut, but though I could hear every word, I did not

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197 recognize a single expression. The following morning I taxed
198 the people with speaking in Vedda language, but they stoutly declared that they could only speak Sinhalese.

In my opinion the majority of the people of the Maha Wedirata are of Vedda origin, but have discarded their
[177] primitive customs as they dwindled in numbers, and while
178] other causes, such as marriage with neighbouring people, tended to still further break down the older customs of the isolated clans that made up the Vedda race as a whole, they still clung in secret to the language of their forefathers, as a binding link and a means of private communication.

115 At Salavai, in the Panawa Pattu, I found one family who admitted that their grandfather was a real Vedda, belonging to one of the clans occupying the country on the confines of the Kumbukkan river.

From the oldest member of this family I obtained a mass of information respecting the habits and customs of the Vedda people.

614 According to this individual, who has adopted the Sinhalese
[563] name of Dissan Hamy, the Veddas were divided up into a number of waruge or clans, each of which occupied and hunted over a specific area of country, and had no connection with the others who lived as separate communities.

The members of each clan were more or less related, and previous to the disintegration of the Veddas as a race, they could not marry any but members of the same waruge.

[462] They lived by hunting, in which only the males took part. Their habitations were caves, and occasionally leaf shelters, but the latter was uncommon.

562 The females were kept in a state of rigid subjection to the
593 males, and could not take part in the chase, ordinary ceremonials, or conversation with any but those who were immediate relations, or the closest relatives of the husband.

562 If the husband was pleased to *throw* some meat to his wife,
593 as part of his spoil in the chase, that was all the woman was
224 entitled to. She could not claim a share simply because she was the man's wife.

291 Under ordinary circumstances, both the males and females
824 were naked, assuming only for special occasions a loin cloth

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of the bark of the Ritti (*Antiaris toxicaria*) for males, and a sort of loaf-skirt for the females.

No jewellery was worn by the males or females. Sometimes a necklace made of shells ("Bellan") was worn by the younger females, but such things as rings were unknown to the earlier Veddas.

They had no idea of time beyond the subdivision of the 24 hours into two divisions, viz., that of light and darkness. Other than this there was no computation except a man's knowledge of a certain striking event that happened in his "small time," but how long ago that was could not be stated.

The taking of a woman to wife required mainly the sanction of the girl's father, after which a few exchanges might be made in signification of the consent of parties. After this the man and woman lived together, while before they would not so much as dare speak to one another in public, unless related.

The age of the woman was invariably extremely youthful at the time of her "marriage," and even at the present day, notwithstanding the comparative civilization of the modern Vedda descendants, youthful marriages still prevail.

I found in response to my inquiries in all parts of the Vedda country that I visited, that 12 years was a common age for a girl to be taken to wife at. In one village I was present at an inquiry by a headman into a case where the girl was only 8. In this case the headman expressed the opinion that the marriage was "very bad."

My informant told me that with the Veddas there was no custom for the woman, when about to give birth to a child, to go to a separate house or hut for the purpose, but that this custom had only come in later.

Among the Veddas there was no such thing as prostitution, nor could I learn that there was polyandry.

The bearing age of women would be at about 14, that of puberty being a year earlier.

Women would have children up to about 28, and as might be expected from the condition of youthful cohabitation for one or two years prior to puberty, the proportion of males and females in a family would be pretty nearly equal. On

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165 the other hand, the mortality would be very considerable among the offspring. This mortality, when infantile, would generally be among the first born and last born, owing to maternal immaturity in the first case and constitutional depletion in the last.

842 On the question of sex I found that the prevalent idea was
893 that if a wife was not thoroughly obedient to her husband she would invariably give birth to females, and it was only complete subjection to the husband's will that could secure a preponderance of males.

I could get no information on the subject of barrenness or sterility.

776 As regards the religion of the Veddas previous to their
782 modernization, it appears that they believed in certain "Yakko," who exercised certain influences for good or evil. There was no conception of a Supreme Creator. On the other hand, the "Yakko" possessed, in common with humanity, a tendency to favour; so that it was always possible to secure its influence in return for special molifying ceremonies. Thus, by certain incantations, ceremonial offerings, or honorific declarations, the Yakko who exercised specific powers could be induced to subtend influence to the advantage of the individual then desiring it. Thus, the Yakka who guarded the deer might be induced to direct the deer to come within the reach of the Vedda's bow and arrows. On the other hand, another Yakka might be propitiated so as to render the hunter invisible to the leopard, so that the hunter would escape harm.

789 Special incantations were supposed to render an individual
294 successful in the chase, so that his aim would be deadly, or that more game would come his way.

753 Again, disease or sickness was the direct outcome of certain
843 malign Yakko, who could be propitiated, and this was specially to be considered when a woman was pregnant, so that the evil might be diverted from the unborn child.

241 I was not able to discover from my informant if the Veddas in their primitive times had any definite form of agriculture. It is certain that they were acquainted with rice, but I could not ascertain how it was procured.

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Equally they were acquainted with tobacco and betel, for I was shown a place where the Veddas established a toll that was paid usually in these particular commodities.

The dog was the only domestic animal reared by the Vedda, and special names were given to these pets.

The Veddas appeared to have no knowledge of melting iron for the manufacture of their particular implements, which consisted of the bow and arrow, the spear, and the small axe, or hatchet. Arrow and spear-heads were procured by barter; the method of procedure was to clear a small space round the foot of a tree by the wayside leading to a village known to contain smiths. Here the Vedda would hang up to the branch of a tree a vessel containing honey, or a piece of meat, which would be taken by the smith, who in return would hang up an arrow-head.

It was understood by both that the quantity or number of articles required would be represented by the number of parcels of meat or honey. Should the smith, however, take the meat and not leave the arrow-heads that were thus silently requisitioned, he would pay the penalty with his life, or some of his animals would be shot by the defrauded Vedda.

The bow was usually made from the wood of the Dunumadala (*Stereospermum chelonioides*) and of the Bignoniaceæ. It was not always of the same length, as this appears to have depended on the springiness of the wood. The arrow was generally about 4 ft. long, or as much as a man could draw the bow to. The arrow-head appears to have been small, large arrow-heads being for ceremonial purposes only.

Fire was obtained by spinning, under moderate pressure, a vertical rod of Welanga wood (*Pterospermum suberifolium*) on a flat piece of wood of the same species, with the point of the former surrounded by floss, or some quickly inflammable material. Later, the flint and steel were found more effective. One example of a flint and steel was shown to me at Panawa, and I tried to purchase it at the owner's valuation, but I found he was most reluctant to sell. I understood that the flint and steel, a lock of hair, and a fragment of cloth represented a title deed, these being given by a dying man to his heir, or adopted heir, as a mode or evidence of transfer.

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524 According to my authority the Veddas indulged in no games, unless, indeed, the custom of tossing dry leaves in the air and speculating on their position when they fell back upon the ground could be called a game. This, I am told, was only an occasional recreation, and indulged in by boys alone.

423 614 628 The limits of the hunting ground were jealously guarded by the Veddas, and anything like poaching by the members of one clan in the area recognised as belonging to another was punishable by death. Should a hunter lose his way and fall into the hands of a neighbouring clan, he would be closely watched, remaining for the time being in a sort of captivity. If the man's conduct during that time was such as to disarm suspicion he was permitted to go, and might even be accompanied to the confines of the clan's hunting ground, but he would have to proceed at once without looking back, or his conduct might lead to the belief that he was a spy, with fatal consequences.

226 The method of fishing was to hem in a piece of water by closely fencing in both ends of the stream. People would then enter the enclosed piece of water, armed with slender sticks, thrashing the water therewith till a fish was actually struck, when it would be captured. I saw this actually done in one pool on the Kumbukkan.

173 My informant told me that the Veddas were at one time harassed by a race of pygmy people, called the Nittawo, who lived in the country known as Lenama, that extended from Bagura in the Panawa Pattu in the east to the confines of the Kattaragama hills on the west.

According to him, these people lived in small troops of from 10 to 40, inhabiting caves, hollow trees, and crevices of precipices. They were about 3 feet or a little more in height, exactly like normal human beings, only in miniature. Their legs were hairy like those of the Wanduroo; they walked erect, and had no tails.

Their arms were short and very powerful, with strong hands, and talon-like finger-nails with which they tore and disembowelled whatever they captured. These generally were small animals, such as hare, mouse-deer, monkeys, iguanas, and tortoises. Their method of attack was by surrounding

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the prey, especially if it was sleeping. In this way the Veddas 173
occasionally fell victims, and in consequence they revenged themselves by exterminating the Pygmies. According to my authority, the Nittawo existed at the time of his grandfather, who, he asserted, took an active part with the other members of his clan in burning out one of their encampments.

The Nittawo were an entirely naked race; the females were shorter than the males. Their language appears to have been understood by the Veddas, and was described to me as like the twittering of birds.

My informant knew nothing of their customs, or if they made use of fire. They were, however, unarmed, and appear to have been finally exterminated by the Veddas about three or four generations ago.

I may here mention that as I was sceptical as to the story about this race, I took particular care to make inquiries at the distant village of Warademiyawa (the furthest inhabited spot on the south of the Buttala-Wellrata) if the oldest inhabitant of that place could give me any confirmation of it. This inquiry was made when Diman Hamy was not present, and it would have been impossible for my questions to have been anticipated. To my surprise, a very old man of the village completely confirmed in detail Diman Hamy's description.

I also made further inquiry at another village from a headman, and he repeated the same story, adding that the Nittawo were destroyed by the Veddas out of fear.

It is difficult to reject as false a story, told devoid of the usual fantastic embellishments that characterise the history of mythical creatures such as Yakko, when it is completely confirmed by parties ignorant of what the others have said. Even though tangible evidence is not forthcoming, and it would be difficult to find any, of a people so primitive as these creatures appear to have been, I see no valid reason for disbelieving the statements made to me.

It would appear that the early Veddas and the Nittawo to 174
some extent lived side by side, and both were primitive. In time the Nittawo were destroyed by a race who were armed, and these in turn were disintegrated and absorbed by forces they were powerless to overcome. The clan system was

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effectual so long as there were no influences to weaken it, but when once a preponderating force came to surround these clans, their chance of survival was small, and to prevent individual extinction amalgamation presented the path of minimum resistance.

The effect of this amalgamation was to break down the primitive methods, and concurrently to infuse new blood, and with it to stay, or lessen, the forces that were weakening an already over-inbred stock.

If we refer to certain statistics, as recently as 1840 we find that a rough enumeration of the so-called Rock-Veddas disclosed that only thirty families in Bintenna then existed.

Since then the increase of civilised races pressed with yearly greater insistence, till we are forced to conclude that the primitive Vedda is now no more, or nearly so.

In my Paper read at the meeting of the Ceylon Branch of the Royal Asiatic Society on September 19, 1914, I have described the features of the Vedda family I found at Setawa, but I venture here to repeat it for easy reference.

The man Dissan Hamy is about 5 ft. 10 in. in height, thin, small round the chest, with rather short arms, slender legs, with hardly any calf development. He does not know his age. His head is small, with small dark-brown beady eyes set far back in their sockets. His hair is short, not tied in a knot, staring, and frizzy. His younger brother is shorter in stature, but with the same character of hair on the head. The elder has short, scanty, and bristly moustaches, but in both brothers there is a marked scarcity of hair on the face and body. Dissan Hamy's two sisters are both of normal height, and dress like the other women of the country. They are about 5 ft. 3 in. in height, with slender limbs. Both women are mothers, and both indicated the small breast development that appears to be characteristic of women residing in the arid parts of the country I explored. In both women the hair is short and frizzy. Their infants had shaved heads.

I remarked that the skin of Dissan Hamy's body is darker than that of the other members of the family. The nose is strongly formed, with thin dilated nostrils. The mouth is rather wide, with lips of no unusual thickness.

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I remarked that while walking through the jungle, though 481
provided with a knife, Dimon Hamy rarely used it to cut away any intercepting branch or creeper, these being invariably bent to one side by the hand.

I observed this custom many years ago when travelling through a distant village called Uda Wellawey at the foot of the Hakkumulla hills, and I understand it is to prevent parrots from finding a hunter's trail.

I made inquiry, in addition to direct observation while 164
exploring the Vedda country, as to the prevailing diseases among the inhabitants, and what was done as regards remedies. The result of my investigation led me to conclude that the commonest disease among adults was fever, but I could get no statistics on which I could rely to form an opinion as to the percentage this particular disease afforded as compared with others.

It was, however, difficult to discriminate in what proportion of fevers typhoid was to be regarded, as I found in many cases the people did not know the difference. Dysentery appears to be well known, and is locally called "Le-pochchame," but I was told that it was not nearly so common as fever. Fever is not common as compared with the prevalence of that disease in the Tamankaduwa District.

Venereal, I am told, is unknown, and probably for reasons I gave earlier in this Paper. It occurs, however, more in the neighbourhood of civilised centres. I did not see a single instance of goitre, or of elephantiasis, though I cannot suppose the latter is unknown. I found numerous cases of sores on the feet and legs of both adults and children, but these were explained as being in all cases due to accidental injuries. Bronchitis, however, is common, more especially in children, who also appear to be commonly troubled with anæmia, which may or may not be directly due to intestinal parasites.

As regards treatment, I found that the remedy was invari- 753
ably based on the theory that diseases may be divided into 757
two great classes—heating or inflammatory, and the opposite —therefore the cure was to be found in those specifics which were opposed to these two heads of causation. For example, if a man had a violent cold, the "milk" of the coconut could

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753 757 not be drunk. Again, in case of fever a decoction would be given of a number of vegetable productions that were believed to be cooling. I may here mention that when questioned as to the exact effect any one of these ingredients would specifically bring about, I could get no clear answer. I found that [278] both *Cassia auriculata* and *Evolvulus alsinoides* were regarded as most beneficial in fever, but I failed to find an answer as to their direct action. Equally *Mussænda pumila* would be considered as a most valuable medicine for fits, as well as fevers.

[755] Charms and incantations appear to be more important than medicines with the people.

I found that castor oil was appreciated and its action understood, but it is curious to note that it is supposed to be effective by outward application, as well as inward. Generally speaking, I found that the local knowledge of our plants was very wide, and it would be difficult to find a plant of any use that the people could not correctly name.

137 824 In some cases where a plant was rare, I found that no name could be given to it; as, for instance, I obtained a few examples of *Centrosthera procumbens*, but the people had no acquaintance with its name whatever. Nor did I find names invented in order to afford answers to my questions: it was a case of giving the right answer, or expressing ignorance.

273 I might mention incidentally, that though our familiar Kitul (*Caryota urens*) is well known, I found the people equally unacquainted with toddy or jaggery, except as purchasable commodities, just as much as kerosine oil is. This ignorance of a source of alcohol may have much to do 674 with the striking absence of crime in the country I refer to, and I mention it in passing, as worthy of consideration. On the other hand, I would again point out that owing to the rigidity of certain customs there is not the same scope for jealousy over women that plays such an important factor in crimes of violence in other parts of this Island. Again, it 361 should not be lost sight of that in the Vedda country small 674 groups of people congregate round centres where water, however limited in quantity and impure in quality, is to be found, and are therefore much more mutually dependent

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than in densely populated areas, where the individuality of the creature is lost in environmental immensity. In the one case he and his are known, in the other he and they are but a fraction.

Considerations of space preclude my enlarging on this subject, or describing in detail the individual conditions of the different villages that I explored, but I venture to think that a careful examination of local factors would throw much light on the evolution of the race from its early stages of primitive existence to its present state of partial civilisation.

Domestic Animals.—These consist of cattle, buffaloes, goats, dogs, cats, and fowls.

Black cattle are abundant in all the inhabited parts of the country I explored, and naturally more so where the opportunities for trade in them exists than in very isolated places. Milk is nearly always procurable, but I heard of no instance of children being exclusively reared upon cow milk. Buffaloes are, where possible, reared for agricultural purposes, and also for the supply of milk, which is often turned into a form of [illegible] that is much demanded.

In one village in the Panawa Pattu I found a Tamil man owning a large herd of buffaloes, and to my surprise I found that he called them by individual names, the animals responding to his call.

I was informed that quite a large proportion of the domesticated buffaloes were half-breeds between the wild and the tame. This may explain why the Vedda-country animal is so much larger than the buffalo of, say, the Western Province.

Goats are rare, and only occur where there are Tamil or Moorish people. I met with them occasionally, but nowhere away from the influences above mentioned. Pigs, except wild, I never met with. Dogs are plentiful, and of a much superior build and type to the village pariah of the civilised country. This is doubtless due to the care the real Vedda has bestowed upon this animal from the earliest time. In point of size the dogs of the Vedda country are large, powerfully built, and bold. Black and white, or brown and white, are the usual colours of these animals. Cats are, generally speaking, scarce, though I remarked at Kumana that while I only saw one dog, I found six cats in that little village.

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235 Of fowls, I observed a remarkable diversity of breed. They may be classed as—

(*a*) The Bantam type, with the medium length of saddle and conspicuous *erect* tail.

(*b*) The wild type, with long saddle and large *drooping* tail.

(*c*) The Cochin-China type, with feathered tarsi.

In the first of these the crow of the cocks is quite distinct, it being what I call a shrill falsetto. In (*b*), what I call the wild type, the plumage of the males approximates that of our jungle fowl, both in its beauty of colouring and in the disposition of the tail feathers. The hens, too, were more commonly brown than in the Bantam type, where white is the prevailing colour of this sex. In (*c*) the feathered leg is the outstanding characteristic. Here the size of bird is larger than in the first group, but shorter in the back than in what I call the wild type. In no case did I find birds with yellow combs, though the early presence of the comb in cock chickens is particularly noticeable. It would appear, therefore, that the domestic fowl has here developed characteristics that would imply crossing from three stocks, one of which is analogous to, if not identical with, the wild bird. On the other hand, the unmistakable crow of the wild bird is different from that of any of the village races.

Of wild animals, the following is a brief list of observed 136 mammalia:—

(1) *The Gray Wanduroo.*—Scarce in the Maha Wedirata, plentiful towards the sea coast in the Panawa Pattu and in the valley of the Kumbukkan river. Probably this species was common all through the Vedda country, but as its flesh was eaten it became exterminated, except in uninhabited places.

(2) *The "Red Monkey" or Rilawa* (Macacus pileatus).—Not common. I found a few in the valley of the Heda-oya and near Lahugala.

(3) *The Loris* (Loris gracilis).—Very rare. I did not see a single example, but I was told by the people that it was known near the "Westminster Abbey" range of hills, and again near Monaragala.

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(4) *Leopard* (Felis pardus).—Common. I constantly came upon the tracks of the leopard in all parts of the Vedda country, except very far away from water. 13

(5) *Indian Civet* (Viverricula malaccensis).—Occasional.

(6) *Mungoose* (Herpestes mungo).—Very common, usually pale coloured.

(7) *Jackal* (Canis aureus).—Very common all through the Vedda country, and probably crosses with the domestic dog. It is commonly believed that the jackal conveys rinderpest, owing to its devouring cattle that have died of that disease. I secured a jackal pup out of a hollow scraped at the foot of a Mustard tree (*Salvadora persica*). The little creature at first showed considerable timidity, but rapidly got over this shyness. Finding a difficulty in providing it with food I had it put back at the place where it was captured. It soon ran off, apparently led by its mother, as I found the spot afterwards to be completely unoccupied.

(8) *Indian Otter* (Lutra nair).—I found the marks of this animal on the Kumbukkan river, but nowhere else. It is well known by the name of Diya-balla, so that I cannot suppose it is rare.

(9) *Bear* (Melursinus ursinus).—Common. I found footprints of bear in the driest parts of the country that I explored, and in places where I could find but few other traces of animals. The fruits of the Palu (*Mimusops hexandra*) and Wira (*Hemicyclia sepiaria*) are readily devoured by bears, who in this way to some extent spread the growth of these plants. I am informed by the people that direct attacks upon human beings by bears are uncommon, and that when injuries have occurred the animal has invariably been startled. Thus, I was told that hollow trees should be approached with caution, as a bear roused suddenly from its sleep within might with equal likelihood spring upon, as away from, its disturber.

Near Nahmaluwahela, on a rocky mass, I found a dead bear. He appeared to have fallen from the rock above on to a ledge below which there was a still larger drop, and being maimed was unable to get up or down from the spot where I found the body.

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136 (10) *Musk Rat* (Crocidura cærulea).—Very uncommon. I found it at Potuvil only.

(11) *Flying Fox* (Pteropus medius).—I can only remember seeing this bat once in the Buttala-Wedirata.

(12) *Bats.*—I did not shoot any, so am unable to specifically name those that I saw, which included—

(*a*) The cave bat;
(*b*) The house bat;
(*c*) A small brown bat, locally called "Kiri-wawula"—a most active species; and
(*d*) A gray bat—probably the Indian Vampire.

The first of these is found in great abundance in caves, but I did not find them as widely distributed as the last three.

I noticed when lying on my camp bed at night under trees that the brown bat would hover quite close to my face. I tried the experiment of lying still with my feet uncovered, to see if they would attack the exposed limb, but beyond hovering within a few inches of me they did no harm.

(13) *The Rock Squirrel* (Sciurus macrurus).—Common, away from habitations, as it has been shot down for food. On the Kumbukkan I found it plentiful, while at Bowela, Danakiri-gama, and Manawela it is distinctly rare. The black variety is perhaps a little more rare than the gray.

(14) *Palm Squirrel* (Sc. palmarum).—Not generally common, and appears to follow human distribution. It is more plentiful near Muppane than at Bowela.

(15) A *Jungle Squirrel*, probably Sc. tristriatus, was seen by me at the base of the "Westminster Abbey" hills. It is readily distinguishable from the last by being a dark slate-coloured animal, with bright chestnut stripes. It is usually solitary.

(16) *Rats* are not very plentiful from my observations, except at Kumuna.

(17) *Bandicoot* (Nesocia bandicota).—I repeatedly heard of this animal as being very destructive to chena crops, but I did not actually see one. It is said to be eaten as freely as the mouse deer.

(18) *Porcupine* (Hystrix leucura).—Uncommon. I found traces of it on the banks of the Kumbukkan river and at

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Siyambala-anduwa, but the people do not speak of it as common. 136

(19) *Hare* (Lepus nigricollis).—Common.

(20) *Elephant* (Elephas maximus).—I came on elephants frequently, but as regards their abundance or the reverse, it appears to be a matter of water distribution; thus, near the Kumbukkan river, the Heda-oya, and Kuraspan-oya one would find abundant traces, or, as I did, the animals themselves. As soon as the country gets dried up in the south-west monsoon the distribution ceases to be general, and the places where elephants will be found is only within reach of water. Directly the rains begin and the fresh grass springs up—as it does do with remarkable rapidity—elephants may be found in all parts, so that it might be said that there is a distinct symptom of migration. I entirely disagree with the opinion, frequently expressed, that "elephants are on the increase"; on the contrary, I believe the opposite to be the case. The elephant has to-day a much more restricted area to wander in than it had a hundred years ago. This area, by the cultural operations of man, is yearly being shrunk up, while shooting for "sport" and kraaling still further lessen the numbers of these magnificent animals. The ease with which one can get an elephant proclaimed a "rogue" adds another to the many causes of its destruction, not to mention the facilities that have in the last twenty years been offered to certain Chiefs to have kraals, the few survivors of which do not breed in captivity. It is only a matter of time for the elephant to be completely exterminated in Ceylon, unless steps are taken, with the aid of suitable sanctuaries, in addition to the complete prohibition of kraaling, except at intervals of, say, twenty years, to prevent this disaster. The actual damage done by elephants is not to be compared with their value as transport animals, and nothing can be more deplorable than allowing such valuable creatures to be shot in the cause of so-called "sport."

(21) *Buffalo* (Bos bubalus).—I found these to be generally distributed in the country I traversed, but not nearly in the same numbers as I found them in 1906. I found many skeletons—equally much devoured—of buffaloes, all pointing

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136 to the fact that rinderpest had destroyed numbers of these creatures. I am informed that in the Panawa Pattu alone that disease killed the wild and tame buffalo alike, and that thousands died in a few months. I found one herd on the Kumbukkan in which I counted some thirty individuals, while in 1906, on the Gajabahu plain, I counted in a single herd over one hundred.

(22) *Sambur* (Cervus unicolor).—Moderately common.

(23) *Spotted Deer* (C. axis).—Common, especially in the valley of the Kumbukkan river. I repeatedly came on herds in this river, in one case finding over 200 drinking in the stream at noon.

(24) *Mouse Deer* (Tragulus meminna).—Moderately common, but more so in the south.

(25) *Wild Pig* (Sus cristatus).—Fairly common, but much less abundant than in 1906, owing to their having been killed out by rinderpest.

(26) *Pangolin* (Manis pentadactyla).—I found traces of this animal occasionally, and by inquiry I heard frequently of its occurrence. It is, however, not common near the coast.

Of reptiles, the crocodile is plentiful where there is water, either in tanks, rivers, or backwaters towards the sea, as, for instance, at Setawe, and all up the Kumbukkan river I found these creatures in abundance.

The *Monitor* or *Talla-goya* is fairly plentiful. It is eaten by both Tamils and the Sinhalese of this locality. I am inclined to believe that there is a dark and a pale race of this species, as I remarked that the latter were much more numerous towards the sea coast, and much lighter coloured than examples obtained near Muppane.

The *Kabaragoya* is comparatively rare. I only saw one or two examples near Muppane. This scarcity I attribute entirely to the absence of water all the year round.

On the north bank of the Kumbukkan I found a (?) Cerato-phora in considerable abundance. These animals are protectively marked, and usually select trees with dark rugged bark to take up their position upon, their own colouring assimilating precisely with that of the bark. Under sexual stimulus in the males the lips become a rich crimson red, with

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large rhomboidal dorsal patches of the same bright colour. On the stimulus diminishing, these points of colour become a dull ashen gray, turning to a pale horny gray with death. The females have similar markings, only in a very inconspicuous degree. 136

I failed to find any examples of this reptile in the north or west of the country to which this Paper refers.

The so-called Chameleon I found no examples of. I obtained a green Calotis, and two examples of Gecko, one about seven inches in length.

Of snakes I only saw three species, viz., the Rat Snake (*Zamenis mucosus*), Russell's Viper (*Vipera russelli*), and the Green Whip-snake (*Dryophis mycterizans*). I specially looked for Cobras, but without success. Russell's Viper, on the other hand, is comparatively common.

As regards the bird distribution, I have thought it desirable to supply a list* in which I have detailed the distribution, as it is of interest to note the exact localities for future reference.

Before passing to this list I would draw attention to certain points of special interest that appear to me to be worthy of more than a brief catalogue notice.

The curious distribution of one Fan-tailed Flycatcher (*Rhipidura albifrontata*) is singular. I found it did not occur east of Monaragala or north of Kebilitte, though in 1906 I found it breeding freely at Pottuvil. On my present exploration I observed it at a place called Kobaragoda, south of Okanda in Panawa Pattu, and from thence still further south to Kumuna, on the Kumbukkan river. It was not seen north of Siyambala-anduwa, nor in any part of the country round the "Westminster Abbey" hills, thus indicating a piece of country of limited extent touching the sea south of Okanda and forming a strip running into Monaragala. From here it passes to the Lunugalla hills, and thence right up to Bandarawela and into Haputale, where it may be found up to 4,000 feet.

I have found it resting at Miriabedde estate, at about 3,800 feet altitude. Again I have found it in abundance in the

* Appendix C.

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136 Wallawe valley below Kaltotta, and from there it spreads into the Tangalla District, and again at Tellijjawella and Henegama in the Matara District, where the rainfall exceeds 100 inches per annum. Briefly, therefore, it is to be found both in the dry and wet zones. It breeds at sea level, and at over 3,500 feet it is common in "park" country as well as in "chena" country. I am not acquainted with a more remarkable distribution—remarkable for its contradictions—of any Ceylon land bird.

Of the Woodpeckers—*Pici*—both *Chrysocolaptes stricklandi* and *Brachypternus erythronotus*—are common in the Vedda country, but chiefly in damp forest areas, where owing to the presence of moisture the trees are large. Away from the damp forests the little *Iynipicus gymnophthalmus* is common right to the coast at Kumuna.

At Galamuna, on the Kumbukkan river, I secured a *Brachypternus* that may prove to be a new species. It resembles *erythronotus*, except that the inner hind toe is only rudimentary, forming only a minute dactyle projection, terminating in an apiculate point that serves as a claw. My example—an adult ♀—measured 10½ in. in length: wing 5¼ in., tail 3½ in., bill (along ridge) 1¼ in., tarsus 1 in. Unfortunately the skin of this bird got destroyed, so that I have been unable to compare it with Museum examples.

I have already hinted that the presence or absence of water governs the question of human distribution within the area under consideration, and I venture to think that the same applies, in some particulars, to the distribution of birds; thus, for instance, the common Black Crow (*Corvus macrorynchus*) occurs only where there are villages; nowhere did I find it in uninhabited forest areas. It was equally common at Kumuna on the sea coast and at Muppane—far inland—in a hilly country. The same might, with some curious exceptions, be said of our Sparrow, that I noticed was common at Pottuvil, Panawa, and Okanda on the east coast, but was absent at Kumuna, and equally absent from many of the smaller villages in the interior of the Vedda country.

The drying up for several months of the year of most of the streams naturally causes a restricted distribution among the

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Kingfishers, but it is conceivable that this periodical flooding and drying of these streams initiates a form of migration that on a more extended scale, brought about by weather fluctuations in geological times, might indicate the impulse of migration in birds. Thus, reverting to the local migration incident to the drying up of large waterways, I noticed on the Kumbukkan river that *Alcedo iepida*, *Pelargopsis gurial*, and *Halcyon smyrnensis* were plentiful, while not one of these birds could be found on the Heda-oya—a river only a few miles to the north; the explanation being that the former stream is perennial, and the latter dry in the south-west monsoon. For the same reason *Ketupa ceylonensis* occurs at tanks that have water, and is absent where the opposite is the case. *Ketupa* is, therefore, to be found along the valley of the Kumbukkan in both monsoons, but only in the north-east on the Heda-oya.

As the time at my disposal was necessarily very limited I could do no more than note what was then to be found, so that a more studied verification of these observations becomes desirable in order to establish proofs of what might be called a local migration law. It is, however, rather striking that species of wide general distribution in the wet zone should show an erratic distribution in the dry, the key to the explanation being possibly found in water distribution. In that direction therefore we may anticipate room for the development of a definite form of migration, though its range may be comparatively limited.

I observed in the immediate vicinity of the Kumbukkan river that at night numbers of insects were attracted by a light, while in the dry country south-east of "Westminster Abbey" there was a comparative scarcity of what I might call *lamp-followers*.

At a spot midway between Kebilitte and Ellebubbura I had a unique opportunity of observing the effect of scarcity of moisture and its influence on insect life. I had seated myself under a tree for a few minutes, to rest after a hot march of about 15 miles. The jungle all round me appeared to be utterly faint with the drought, and I may add that I felt much the same myself. I was in a considerable state of perspiration, when I noticed a couple of butterflies hovering

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136 quite close to me. Presently one of them lit on my wrist, and began sipping the moisture as it came from my skin. The second insect quickly followed exactly the same procedure on my slowly extending my arm.

At a small puddle, measuring about 2 ft. by 18 in., I found the whole of the damp ground covered with wasps sipping the moisture.

Some idea of the dryness of the locality can be judged from these instances, and I submit that animal distribution must be affected thereby.

137 The distribution of plants, not of direct value to man, moreover shows certain erratic conditions. The most striking instance of this is in the distribution of the Dipterocarps. At Monaragala, and a little to the eastward, our common Hora (*Dipterocarpus zeylanicus*) is moderately plentiful. From Liyangalla onwards towards the east it is absent, but to the north-east of Siyambala-anduwa, near the village of Newgalla, one finds fringes of *Vatica obscura* on the banks of the dry streams; in other words, there is an enormous belt of country the opposite sides of which have representations of this important order of trees, with no examples in the intermediate area.

On the other hand I found no examples of *Vatica obscura* to the south of Siyambala-anduwa on any of the streams I crossed.

Of the Dilleniaceæ, I found *Dillenia indica* on the higher reaches of the Heda-oya, and a few individual examples—probably introduced—towards Waragoda in the north and at Kumuna in the south-east.

Of the Anonaceæ, the usual dry-zone *Polyalthias* are very abundant. Both *Anaxágrea panículata* and *Tinospora cordifolia* are abundant representations of the Menispermaceæ.

In the tanks where there was water, both *Nymphæa lotus* and *Nelumbium speciosum* are common Lotuses. Both roots [227] and bulbs of these plants are eaten.

In some of the chenas I found *Brassica juncea* grown with the other crops, but I could get no definite explanation why it was cultivated.

Of the Capparideæ, the typical *Capparis zeylanica* is plentiful. [262] Its fruits are eaten by the Veddas as well as the Tamils. I

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found that towards the coast *Crataeva roxburghii* occurs, but it is by no means plentiful, as in the Hambantota country. 137

Of the Bixaceæ, I found a few examples of *Cochlospermum gossypium*, but clearly these were introductions connected with Buddhistic places of worship. It may be safely assumed that where an "escape" of this species is found, one may look for temple "remains," and the same may be said of Ironwood, *Hibiscus ficulneus*, or *Balsamodendrum caudatum*.

Scolopia gærtneri is a wild and plentiful representation of this order, and abundant round "Westminster Abbey" and Degalhela. *Hydnocarpus venenata* occurs in abundance by stream sides, and is probably more plentiful than *H. alpina*, which is confined to the dry low-country, notwithstanding its inappropriate specific name.

Passing over unimportant orders to the Guttiferæ the following claim notice: *Garcinia spicata* is very common and widely distributed; *Calophyllum burmanni* is occasional; *C. tomentosum* occurs at "Westminster Abbey" and near Degalhela; *C. inophyllum* is practically confined to the coast, though not entirely so, while a further example of this genus (the identity of which has yet to be determined) I have referred to already in an earlier Paper, published in the Journal of the Ceylon Branch of the Royal Asiatic Society, as being a probable foreigner.

Ironwood—*Mesua ferrea*—occurs in quite a forest form round the base of Himitillanegala, where, I suspect, it was introduced. It occurs at all the old temples, but is otherwise scarce.

Of the Malvaceæ, *Sidas* and *Abutilons* are exceedingly common. *Urenas*, on the other hand, are to be looked for in damp waste places, where they attain to considerable size. *Thespesia populnea* is an introduction, and not particularly common. *Hibiscus tiliaceus* occurs near backwaters, but it is not generally plentiful. *Bombax malabaricum* occurs in the form of immense individuals, but it is certainly not plentiful; while *Eriodendron anfractuosum*, on the other hand, is a plentifully introduced garden plant.

Among the Sterculias prominence should be given to *S. fœtida*, well known to the Tamils as the Katu-tengai or forest cocoanut, *S. colorata*, and *S. thwaitesii*. I obtained a

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137 few solitary examples of *S. urens*, but I feel confident that this last is an introduction. *Pterospermum suberifolium*—the Welanga of the Sinhalese—is very abundant.

[824 372 411] The young straight shoots of this plant supplied the Vedda arrow, while the wood was employed by them for the manufacture of "fire drills."

The distribution of *Helicteres isora* is curiously restricted to what might be turned "patches," the largest of which I found at Etmole. *Heritiera littoralis*—the Chomanturai of the Tamils—is scarce, but occurs near Panawa and Pottuvil.

Of the Tiliaceæ, I noticed that the distribution of Halmilla (*Berrya ammonilla*) was not very general, while its abundance or scarcity appeared to be a matter of its easy access or the reverse. This is to be expected of so valuable a timber tree. "*Vidpani*" (Tamil) (*Pityranthe verrucosa*), so plentiful in the Trincomalee District, is comparatively scarce in the Vedda country. Of the Grewias, *G. tiliæfolia*, *G. microcos*, and *G. polygama* are the commonest, but the first of these is not so abundant here as in the dry zone of the Ratnapura District.

As representing the Linaceæ, *Erythroxylon monogynum* may be taken as an abundant typical example. It is alleged in the Panawa Pattu that meat hung in the smoke from burning wood of this plant, if eaten produces a purgative action.

Both *Hiptage madablota* and *H. parvifolia* of the Malpighiaceæ occur in the Vedda country, but in no abundance.

The bright, but pestiferous, *Tribulus terrestris*, is to be found near Pottuvil and at Panawa, in places where the soil is not too dry, but its distribution does not spread far inland.

Of the Geraniaceæ I found very few examples. In some slightly moist spots, west of "Westminster Abbey," I observed *Biophytum sensitivum*, and in some of the tanks I got *Hydrocera triflora*, but in other respects, except the introduced *Averrhoa bilimbi* and *A. carambola*—common in gardens—this order is poorly represented. The Rutaceæ is not well represented in wild species, if we except the well-known *Feronia elephantum*, *Murraya kœnigii*, and *Toddalia aculeata*. In the gardens oranges, lime, and pummalo have been introduced, but with no marked success either in the matter of quality or quantity

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of fruit, an insipid fibrous product being the usual type of Vedda-country orange. 137

In dry rocky ground *Ochna wightiana* is to be found in some abundance, as exemplifying the small order of the Ochnaceæ.

Of the Burseraceæ, I have already pointed out that *Balsamodendrum cordatum* may be taken as indicating some place of veneration. I found in many cases where there were ruins, or abandoned monastic caves, this plant would be sure to occur. [172] On the summit of "Westminster Abbey" it is comparatively abundant, as also at Nuwaragala—another ancient fort. Doubtless the fragrant smell of the wood led to its use as an incense, and, thus, to its cultivation. *Canarium zeylanicum* occurs very sparingly west of Bowela, and *Filicium decipiens* may be found in the forest valleys, though it does not attain any striking proportions.

The Meliaceæ is very well represented. The Margosa, however, as typical of this order, is an introduction, and where it is found under semi-wild conditions the inference is that that particular spot was once inhabited. This beautiful tree, however, is afflicted with a disease that kills back the young twigs, and I remarked that this sickness is very widespread. *Melia dubia*, often called Wal-kohomba, occurs in the western part of the Vedda country, but in no great abundance. *Walsura piscidia* and *Dysoxylum binectariferum* are both common, while the famous Satinwood is, of course, very fairly abundant, except in what might be called wet forest. The abundance of Satinwood has, as I have hinted, doubtless from very early times been influenced by human operations, as the value and quality of this excellent wood is widely known. That being so, its spread has been materially governed, with the result that in a great deal of the country where it once must have been plentiful there are now only isolated examples.

Memecylon pumila occurs in tolerable abundance round Bowela, Waragama, and Dambkiria. It is medicinal.

Of Celastraceous plants, *Elæodendron glaucum* is very common near the coast, and attains a large size. A *Kurrimia*, probably a variety of *K. zeylanica*, is found occasionally in the northern half of the country I explored, but does not appear to attract native attention.

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[137] It is almost superfluous to remark that the Rhamnaceæ are abundantly represented by various forms of *Zizyphus*, both as an abominable thorny climbing bush, or in the more elegant *Z. jujuba*. *Scutia indica* is plentiful near damp spots, while *Ventilago maderaspatana* is most abundant.

Vitis quadrangularis is, perhaps, the most common example of the Ampelideæ, while *Leea sambucina* is specially noticeable in the vicinity of large streams.

The Sapindaceæ afford plentiful examples in *Allophylus cobbe*, *Sapindus emarginatus*, or soap-nut, *Nephelium longana* (*Mora*, Sinhalese), *Schleichera trijuga* (*Kon*, Sinhalese), and *Glenia zeylanica*, all of which are about equally distributed.

[924 278] In waste ground the creeping *Cardiospermum halicacabum* is plentiful; its use as a tonic appears to have been known to the Veddas.

I also observed *Dodonæa viscosa* in a few isolated places, particularly near Wattegama, but to my surprise its use as an embrocation was apparently unknown.

Of the Anacardiaceæ, if we except cultivated species, few occur. The wild mango (*Mangifera zeylanica*) is to be found near or in the Heda-oya valley, but not in great profusion. *Odina wordier* is to some extent cultivated, as it is frequently to be found preserved where there are fields. *Nothopegia colebrookiana* is seemingly unknown to the people, though I found it frequently. *Spondias mangifera* I believe to have been introduced.

Passing to the Calycifloræ, the small order of Connaraceæ finds as its best representative the widely distributed *Connarus monocarpus*, that appears to thrive equally well in the wet [924] and dry zones. I found it in abundance in some of the driest situations. It is said to be of use for buffalo ropes.

Of the Leguminosæ, space considerations oblige me to make but the briefest reference to the better known examples in a list form :—

Crotalaria retusa. In open waste places.
C. striata. Occasional, in dry fields.
Indigofera pauciflora. In abandoned fields.
I. hirsuta. In waste places and road sides.
Æschynomene aspera. In damp places or puddles.

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Abrus precatorius. Very common in scrub jungle.
Mucuna (?) pruriens. Moderately common (in fruit).
Erythrina indica. In gardens—occasional.
E. ovalifolia. Near streams and tanks—uncommon.
Butea frondosa. In the park country near Etmole.
Clitoria ternatea. Common; not seen in forest.
Flemingia strobilifera. Near streams and cool spots.
Pterocarpus marsupium. In park country—common.
Pongamia glabra. Common near water.
Dalbergia lanceolaria. Moderately common; of large size.
Derris scandens. Common all over the country.
Cæsalpinia bonduk. Occasional; possibly introduced.
Cassia fistula. Moderately common.
C. marginata. Common, even close to the sea.
C. auriculata. Commoner near the coast than inland.
Dialium ovoideum. Common on the summit of "Westminster Abbey."
Saraca indica. Occasional in damp forests.
Tamarindus indica. In gardens, abandoned or otherwise. An introduction.
Bauhinia tomentosa. Plentiful.
Entada scandens. Generally near streams.
Dichrostachys cinerea. Moderately common in bush land.
Mimosa pudica. Occasional.
A. leucophlæa. Comparatively rare.
A. eburnea. Common near the coast.
A. cæsia. Very common, especially near damp forests.
A. pennata. Less common, generally locally plentiful.
Albizzia odoratissima. Moderately abundant in the west.
A. stipulata. Occasional.
Pithecolobium geminatum. Locally abundant.

Of the Rosaceæ, I noticed a Pygeum near Bowela, in a valley, but procured no examples for identification. On the banks of the Heda-oya I also secured another, probably an escape from higher altitudes.

Bryophyllum calycinum, as representing the Crassulaceæ, is probably an introduction. It infests places where the soil is not deep, as, for example, near slab rocks, but generally in these cases near habitations or places once inhabited.

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137 Of the Droseraceæ, *Drosera burmanni* is to be found on the edges of tanks where the soil is damp, and again I have found it on thin soil on rocks. This plant appears to be equally at home at all altitudes in Ceylon, both in the wet as well as the dry zone. I failed to find it near the sea, though it occurs at no great distance inland.

The Rhizophoraceæ are well represented by Mangroves that occur in tidal estuaries. Of these, *Rhizophora mucronata* is by far the most common. *M. candaria*, with its large leaves, is also often found along with the last, and with *Bruguiera gymnorhiza*. I also observed a *Ceriops*, but not in flower. In a valley south of "Westminster Abbey" I saw *Anisophyllea zeylanica*, but this plant appears to belong to a higher altitude. *Carallia integerrima* is to be met with in the Kumbukkan valley.

The Combretaceæ afford magnificent examples of Kumbuk (*Terminalia glabra*), that are to be found on the banks of all the streams in the Vedda country. The "Aralu" (*Terminalia chebula*) is also common in the "park country" near Etmole, while its close ally, *T. belerica*, is frequently to be met with right through the Maha Wedirata. Again, in the "park country" *Anogeissus latifolia* is fairly common. *Combretum ovalifolium* occurs in rocky places in some abundance. The gaunt *Gyrocarpus jacquini* is very common; it forms a characteristic tree in this dry locality.

Of the Myrtaceæ, I found the most abundant examples in *Eugenia jambolana*, that occur in tank beds, while *E. bracteata* occurs in all the dry forests. By the sides of backwaters, or where the soil is damp, *E. corymbosa* forms a common bush.

I noticed a few examples of our common Guava (*Psidium guajava*) in some of the old gardens, but nobody could tell me how it came to be introduced. *Barringtonia acutangula* is moderately common in and about tanks, where it attains a considerable size. On the banks of the larger streams I obtained *B. racemosa*, but it is not plentiful. *Careya arborea*, however, is moderately common in the northern part of the country I am treating of.

Of Melastomaceous plants, I found very stunted forms of *Osbeckia (?) aspera* growing in most impossible places. Near

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Bowela I found, in a damp valley, a *Sonerila* growing in a rocky crevice. *Memecylon umbellatum*, *M. grande*, and *M. capitellatum* are all very common in the forest areas. 137

Of the Lythraceæ, I found *Lagerstræmia flos-reginæ* not uncommon on the banks of the larger streams, where it frequently occurs as a large tree. *Lawsonia alba* is cultivated at Panawa. In the "park country" I found a few examples of *Woodfordia floribunda*, but this is far more common near Passara and Bandarawela.

The poisonous *Modecca palmata* is often to be met with, but is not common. I was surprised to notice that it was little known to the people. *Passiflora fœtida*, however, appears to be well known, though its distribution is probably more restricted. The Papaw has been introduced here, and is to be found in some of the gardens, but sparingly.

Of the Cucurbitaceæ, I found *Trichosanthes integrifolia* to be fairly common, its brilliant red billiard-ball-like fruits being very conspicuous. I suspect that it is eaten by monkeys, as I frequently found fragments of the fruit. *Cephalandra indica* is often to be seen in dampish forests. In all the [241] chenas Cucumbers of sorts are grown, and appear to find a considerable market demand.

Possibly these may have originated in the well-known cucumber, but owing to degeneration and environment have changed their form, for certainly the average shape of Vedda-country "Kekiri" is more round in outline than ovate. The "rind" is remarkably bitter to the taste.

Of the Begoniæ, I found a few examples of what I take to be *B. malabarica* not far from the base of Westminster Abbey, but it may have been an "escape."

Our monotypic *Tetramelas nudiflora* occurs but sparingly in the north of the Maha Wedirata, while the individual trees are immense.

Of the Cactaceæ, *Opuntia* (*?*) *dillenii* is frequently to be met with, both in a semi-wild state and in hedges. I found it growing in profusion at Okanda, and all down the coast where there were, or had been, gardens. I am unable to say if the Veddas knew it, though the name Katu-patuk is well known. I am inclined to suppose that it was spread by the Tamils.

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137 Considerations of space oblige me to avoid more than a passing reference to the larger Gamopetalous plants, hence my having unnoticed several of botanical interest. I therefore select of the Rubiaceæ the following :—

Sarcocephalus cordatus. Moderately common in beds of tanks and by river sides.

Anthocephalus cadamba. Rather rare, but occurs towards Mayyanæ.

Adina cordifolia. Locally plentiful.

Strephegyne parviflora. Rather common, and valued for its timber.

Wendlandia notoniana. Occasional, towards the Monaragala hills.

Mussænda frondosa. Not uncommon near streams.

Gardenia latifolia. Plentiful in rocky ground.

Canthium didymum. Common, especially near rocks.

Ixora parviflora. Common.

Morinda tinctoria. Common, especially near the coast, and often found in gardens.

Webera corymbosa. Exceedingly common.

Of the Compositæ :—

Vernonia cinerea. Exceedingly common.

Elephantopus scaber. Plentiful in the whole country, but avoids deep shade.

Ageratum conyzoides. Everywhere an abundant introduction.

Sphæranthus indicus. Common in fields.

Bidens ? Not uncommon near abandoned villages, and occasionally on river banks.

Of the Goodenovieæ, I found *Scævola Königii* common at Okanda on the sea coast, the only place I have found it in Ceylon.

Of the Plumbagineæ, our only Plumbago is occasionally found in most unexpected places, but nowhere in abundance.

Of the Myrsineæ, I found an *Ardisia* in many of the forests near rivers, but I am uncertain of its identity. The leaves are large and grow in verticils.

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Of the Sapotaceæ, by far the most important is the Palu (*Mimusops hexandra*), but its distribution is erratic. It is plentiful between Lahugala and Pottuvil, but the individual trees are not large. Towards the Heda-oya, and in the arid country west of Panæwa, it also occurs plentifully, but towards the Kumbukkan valley it again ceases to be abundant. This erratic distribution in a country that favours the growth of Palu is probably, as suggested earlier in this Paper, the outcome of early trade in this valuable timber.

Munamal (*Mimusops elengi*) occurs very frequently, but does not become very large. *Bassia longifolia* I have already referred to. It is very plentiful up the Kumbukkan river, the trees there attaining an enormous size; elsewhere it is practically rare.

Of the Ebenaceæ, perhaps the most common is *Diospyros embryopteris*, that occurs where there is moisture near at hand. [162] The Veddas eat its fruit.

D. ebenum, like "Palu," appears to have been largely exploited, with the result that it is only in remote spots that it is to be found in any abundance. *D. ovalifolia* occasional, growing in patches.

Both *Salvadora persica* and *Azima tetracantha* are abundant, the former being common near the coast, but neither in real forests.

Of the Apocynaceæ, the most distressingly common is undoubtedly *Carissa spinarum*, that occurs always where treed forest has been cleared. *Carbera odollam* is fairly plentiful in the Panæwa Patte, and is regarded as useful for fencing fields.

Plumeria acutifolia is always associated with temples, abandoned or otherwise, but I failed to obtain any information regarding its introduction.

Alstonia scholaris is not uncommon, and attains enormous proportions.

Tabernæmontana dichotoma is also to be found sparingly, but generally in damp spots.

Of Asclepiads, *Hemidesmus indicus* is very plentiful in waste land.

Calotropis gigantea is very abundant, especially near the sea.

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[37] *Strychnos brunoiensis* occurs frequently, especially in the bush country.

Diospyros ebenaster is also fairly abundant near to Liyangolla and Muppane.

Of the Loganiaceæ, the well known *Strychnos nux-vomica* is most abundant. It is remarkable, in view of its being so common, that cases of children poisoning themselves by eating the seed are rarely heard of.

S. potatorum occurs, but is not abundant. I looked out for cases where the seeds were used for precipitating muddy water, but failed to find an instance of its use in this direction.

Of the Gentianaceæ, *Exacum sphæricum* occurs in fields, but the flowers are much paler than in wet-country examples.

Of the Boraginaceæ, *Cordia myxa* is fairly common. *Tournefortia argentea* occurs on the seashore, but is not plentiful. *Heliotropium indicum* is very common in waste ground.

Of the Solanaceæ, mention need only be made of *Datura fastuosa*, which appears in nearly all the more established gardens. The various "Bettas" I can pass over, as being common all over the Ceylon low-country, and as probably introduced.

Of the Scrophulariaceæ I desire to draw attention to only one, *Centranthera procumbens*, owing to its presence in a dry country being remarkable. I found it on two occasions only, first between Nuegalla and Dunukiriya, and the second time about five miles south of Liyangolla. On both these occasions I asked the villagers if they could name it, but without success. Its presence is singular, as it is generally to be found only in the wet zone, or in a country where extremes of drought are not experienced.

Of the Bignoniaceæ, *Oroxylum indicum* is moderately common, but I think there is little doubt that it was introduced for the sake of its medicinal value. *Dolichandrone rheedii* occurs near the coast, near standing water. *Stereospermum chelonioides* is fairly common. Its wood was used by the Veddas for bows.

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Of the Pedaliaceæ, *Pedalium murex* is common near the coast, and is used by both the Sinhalese and Tamils for a demulcent. *Martynia diandra* occurs on the fringes of villages

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in waste ground, as if introduced. *Sesamum indicum* is 137
sparingly cultivated.

The Verbenaceæ afford, among many others, the valuable Milla (*Vitex altissima*), which is generally plentiful. I am inclined to doubt if var. *alata* can be sustained, as I repeatedly obtained examples of "broadly-winged" petiolated leaves on the same tree that bore normally petiolated leaves. This "winging" of the leaf-stalk appears to be a matter of maturity, as in very young shoots the "wings" are often markedly pronounced. *V. leucoxylon* is common about tanks. *Gmelina asiatica* is moderately common in waste ground near habitations. *Premna tomentosa* and *P. serratifolia* are both abundant, the leaves of the latter being eaten. *Avicennia officinalis* is common in wet ground near the coast.

Passing to the Lauraceæ, the most useful is the well known "Rassi" (*Persea semecarpifolia*), fairly common in the forest areas, especially south of Kalla Oya and below Dagalhela.

Of the Thymelæaceæ, I repeatedly obtained *Gyrinops walla*, its value as a cordage being known to the Sinhalese Veddas.

With a rapid glance at the Euphorbiaceæ and the Urticaceæ I must conclude my notes on the plants of the Vedda country:—

Euphorbia antiquorum is frequently to be met with, but it does not attain the proportions so marked in the Hambantota District.

E. tortilis, if I may accept a 4-winged branch as indicating this species, I observed near Bubbama.

E. tirucalli is common as a hedge plant, especially near the coast.

Bridelia retusa. Rather common.

Phyllanthus emblica. Occasional, more common towards Monaragala.

Phyllanthus longipyrus. Very common in land that has been cleared.

Hemicyclia sepiaria. Exceedingly abundant. Its fruits 142
are much relished by the Veddas, and, I might also add, by bears and monkeys.

Nicholsonia nephelioides occurs sparingly by the rivers, but is not generally distributed.

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137 *Aleurites triloba* is to be found in a few village gardens towards the west, but is nowhere cultivated in much quantity. It is an introduction.

Dimorphocalyx glabellus. Exceedingly common, except near the sea shore.

Mallotus albus. Tolerably plentiful, especially in the west.

Macaranga tomentosa. Occasional. There is reason to suppose this has been to some extent introduced merely for the sake of the large peltate leaves, that afford a useful substitute for plates. By tracing a group of these trees I was able to find one of the most important of the caves on the east flank of "Westminster Abbey."

Chaetocarpus castanocarpus. Occasional.

Stipium insigne. Common, especially near rocks.

Holoptelea integrifolia, representing the Urticaceæ, is very common up to within a short distance of the coast. It occurs right up the Kumbukkan valley to the foot of the Uva hills, after which it becomes scarce.

Trema orientalis I found to be locally plentiful, but more so towards the hills.

Streblus asper. Very common, and with much variation in the size of the leaf.

Ficus benghalensis (the Banyan of Europeans) is very abundant right down to the coast. It appears in all the old established villages, which leads one to the idea that it was introduced. I have, however, found it in localities where it may have been introduced by birds transporting the seed from the (?) cultivated trees, as the fruits are readily devoured by Barbets and Pigeons.

F. retusa. Very common.

F. arnottiana. Occasional, especially in rocky places.

F. tsjakela. Occasional, and appears to be singularly partial to old ruins.

F. hispida. Not uncommon near rivers and in damp forests.

F. religiosa. Common near any temple. At Kurunegala I found some enormous examples, as also at Wattegama.

[824 2[illegible] *Antiaris toxicaria*. Rare. I am informed, as stated early in this Paper, that the Veddas use it for making "loin clothes" to be worn on ceremonial occasions.

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Artocarpus nobilis. Quite rare, and only seen up the Hedaoya valley. 137

A. integrifolia. Cultivated, but not usually attaining any very large size, unless water is within reach.

A. incisa. At Buddama I was shown a solitary example of our well known Breadfruit tree, and I was informed that it was the only one of its kind to be found in the Vedda country. While this may not be strictly correct, I may mention that I found Breadfruit trees became exceedingly rare east of Monaragala.

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APPENDIX A.

Amparai Rainfall.

	1904.		1905.		1906.		1907.		1908.		1909.		1910.		1911.		1912.		1913.	
	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.
January ..	—	—	12·23	7	4·97	8	4·32	7	10·36	15	4·85	9	17·70	13	8·82	11	2·24	6	50·06	28
February ..	—	—	2·75	3	0·09	1	1·58	4	7·59	6	7·00	8	4·01	11	2·71	6	0·81	2	7·73	12
March ..	—	—	0·00	0	1·21	4	5·40	8	8·53	8	2·64	4	0·00	0	1·45	2	4·77	6	2·02	5
April ..	—	—	7·41	12	0·53	3	4·72	8	4·37	6	1·77	6	1·07	5	0·00	0	2·52	7	2·80	7
May ..	—	—	5·62	8	1·13	3	1·09	3	1·31	3	0·86	5	1·09	6	1·90	2	1·44	5	0·53	3
June ..	—	—	2·48	7	2·00	4	4·49	4	0·00	0	0·89	1	0·20	3	1·33	4	6·93	4	0·05	1
July ..	—	—	0·10	1	5·66	7	0·23	2	2·55	3	0·00	0	2·18	9	1·69	1	0·03	2	0·76	4
August ..	—	—	3·03	6	8·24	5	3·38	5	2·20	7	5·31	8	5·38	13	7·35	5	2·82	4	1·35	4
September ..	—	—	2·85	4	3·51	5	1·27	5	3·20	9	2·70	6	5·78	9	9·30	10	6·74	5	1·36	3
October ..	—	—	2·02	8	10·84	10	6·52	13	7·11	17	9·56	16	14·66	17	10·41	17	7·32	19	12·17	15
November ..	—	—	23·15	12	10·82	22	9·61	12	9·08	11	4·24	12	11·58	12	23·90	24	12·15	18	11·90	19
December ..	—	—	5·08	10	9·30	9	3·50	5	24·92	25	7·79	10	21·65	19	32·91	24	14·72	19	33·99	19
Total ..	—	—	68·74	92	58·30	84	46·09	74	81·20	110	47·61	94	86·60	117	101·77	106	62·49	95	124·72	120

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ROTHAMSTED RAINFALL.

	1904.		1905.		1906.		1907.		1908.		1909.		1910.		1911.		1912.		1913.	
	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.	Inches.	Days.
January			4·90	14	0·71	8	0·67	8	0·38	14	0·03	1	2·33	12	0·92	8	0·27	4	2·52	24
February			4·24	11	0·32	5	0·45	6	0·77	9	0·09	2	0·32	3	0·43	5	0·88	9	1·43	20
March			0·60	5	2·17	12	2·22	11	2·22	11	0·81	5	0·85	6	0·35	5	2·15	12	0·00	0
April			2·65	12	1·43	11	0·81	10	0·55	8	0·88	5	2·22	11	0·30	5	0·76	8	0·00	0
May			1·67	11	0·60	7	1·88	10	0·64	7	0·33	4	0·60	7	0·16	3	2·84	14	0·00	0
June			0·87	7	1·79	11	1·28	11	1·55	11	1·11	7	1·45	9	0·64	6	0·00	0	0·00	0
July			2·57	17	3·76	16	1·69	13	1·25	9	0·07	2	2·38	14	1·24	9	0·20	2	0·00	0
August			0·89	8	0·60	7	0·47	10	1·69	11	0·17	3	0·98	8	1·56	9	0·45	5	0·00	0
September			3·55	24	6·18	16	0·32	5	4·10	11	4·74	10	3·80	14	3·99	20	6·61	15	0·00	0
October			0·48	6	11·06	18	11·68	13	3·51	12	3·00	10	0·47	5	2·83	22	1·44	16	0·00	0
November					0·84	8	4·30	9	10·34	18			20·47	14	2·72	22			28·52	11
December																			0·00	0
Total			30·91	70	43·67	91	45·69	96	60·01	91	35·48	86	78·53	60	91·14	81	30·90	77	31·94	80

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APPENDIX B.

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	Monaragala Hospital, 700 ft. altitude. Inches.	Mean for 11 Years. Inches.
January	3·13 ..	7·61
February	·26 ..	3·61
March	3·20 ..	5·78
April	15·07 ..	7·02
May	7·64 ..	5·48
June	1·23 ..	1·72
July	·70 ..	3·09
August	3·33 ..	5·72
September	2·47 ..	6·41
October	4·88 ..	8·72
November	8·74 ..	9·80
December	10·33 ..	9·19
Total	60·99* ..	72·91†

* 110 days for 1912. † 101 days

APPENDIX C.

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List of Birds observed in the Vedda Country during July, 1914, giving Local Distribution.

1. *Astur badius.* One seen at Guruhela.
2. *Accipiter* sp. (?). The Museum Collector obtained a ♀ Accipiter, which I am inclined to think is a new species to Ceylon. It was one of a pair that were engaged in building at the time it was shot. It possesses the characteristic long central toe, but in size it is much smaller than *A. nisus* or *A. virgatus*, with the breast boldly marked with dark smoke-brown streaks and blotches, and not barred. The second and third primaries also differ from the last mentioned, while the tarsus is also markedly stouter. My example was obtained at Newgala.
3. *Pernis cristatus.* Observed at Panawa and Bargura.
4. *Spilornis cheela.* Observed at the base of the Monaragala hills, at Guruhela, Etmola, Panawa, and near Kebilitta.
5. *Haliætus leucogaster.* Observed at Panawa, Okanda, Lahugala, and Kumuna.
6. *Haliastur indus.* Common at Panawa and at Bargura.
7. *Falco peregrinus.* Nesting in the eastern cliff of "Westminster Abbey."

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8. *Ketupa zeylonensis*. Heard at Muppane, Liyangolla, but only near places where there was water. 136

9. *Huhua nepalensis*. At Panawa I heard the cry of what I believe to be this, but I include it doubtfully.

10. *Scops gia*. Heard at Siyambala-enduwa.

11. *S. bakkamoena*. Heard at Danakirigalla, Ellebubbura, Muduwa, and Kumuna. I think there is no doubt about this being *bakkamoena*, though I did not actually obtain one.

12. *Glaucidium*. I heard these owls repeatedly at Panawa, Bargura, Danakirigalla, Ellebubbura, Muduwa, and Meragmalpokuna, but unfortunately obtained none so as to determine the species, but judging by the note I believe the birds I heard were *Cuniculorum*.

13. *Palæornis cupatria*. Distinctly scarce. Occur in the valley of the Kumbukkan.

14. *P. torquatus*. Kumbukkan valley, Uva boundary, Siyambala-enduwa, Manawela, Ellebubbura, and Liyangolla.

15. *P. calthropæ*. Common at Danakirigalla, some at Liyangolla, Muduwa, and Panawa.

16. *Loriculus indicus*. Seen at the Uva boundary near Siyambala-enduwa, and heard in the Kumbukkan valley.

17. *Iyngipicus gymnophthalmus*. I obtained two at Siyambala-enduwa. Common at Ellebubbura, Ampitiya, Kitulana, Kumuna, and east of Panawa. My examples are both ♀, and measure:—

(a) Length 4·75 in., tail 1·50 in., wing 3 in., bill ·54 in., tarsus ·50 in.

(b) Length 5·00 in., tail 1·50 in., wing 3 in., bill ·50 in., tarsus ·50 in.

18. *Chrysocolaptes stricklandi*. Plentiful at Lahugala. Occurs at Kurapan-oya, in Kumbukkan valley, Heda-oya valley, Danakirigalla, Ellebubbura, Ampitiya, and Etmole.

19. *Brachypternus*. I obtained, while going up the valley of the Kumbukkan river, what I have referred to in the text as possibly a new species belonging to this genus. The short, or, I should say rudimentary, inner hind toe is particularly striking.

20. *B. erythronotus*. Valley of the Kumbukkan, Panawa, and Bargura.

21. *Thereiceryx zeylonicus*. Occurs at Lahugala, Panawa, Kurapan-oya, Okanda, Kumuna, valley of the Kumbukkan, Bowela, and round "Westminster Abbey."

22. *Oyanops flavifrons*. Not particularly common. Found near Degalhela, Ellebubbura, Lahugala, Panawa, Okanda, Kumuna. Plentiful near Monaragala.

23. *Xantholæma rubricapilla*. Common all over the Vedda country.

24. *Cuculus sonnerati*. Observed in the valley of the Kumbukkan river.

25. *Coccystes jacobinus*. Not seen east of Muppane, where it is plentiful.

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136 26. Without having actually seen the bird, I venture to include a Cuckoo that may be identified by its monotonous and melancholy note, that represents the words "Captain Philpotts." It is common in the dry forests and plentiful near Maha-oya. I have spent considerable time and trouble in trying to obtain it, and while getting to within a few yards of the creature, I have always failed. I found it to occur at Etmole and the dry country towards Chimney Hill. Its exact identity is unknown to me.

27. *Eudynamis honorata*. Heard at Panawa.

28. *Phœnicophæs pyrrhocephalus*. Seen at the Uva-Eastern Province boundary, Kumbukkan valley, Siyambala-anduwa, but not near the sea.

29. *Rhopodytes viridirostris*. Scarce; only near Monaragala.

30. *Centropus sinensis*. Abundant right down to the coast.

31. *Harpactes fasciatus*. Common at Siyambala-anduwa; seen in the valleys of the Kurupan-oya and Kumbukkan river; not elsewhere.

32. *Anthracoceros coronatus*. Common in the valley of the Kumbukkan. Seen at Panawa and Bargura, at which last place I obtained two measuring:—

♂ Length 35·50 in., wing 12·85 in., tail 14 in, bill 7 in., tarsus 2·25 in.

♀ Length 33·50 in., wing 12·25 in., tail 12·25 in, bill 6 in., tarsus 2·30 in.

33. *Tockus singalensis*. At Lahugala, Kurupan-oya, Kumbukkan river. Comparatively a scarce bird.

34. *Ceryle varia*. Occurs at Panawa and the lower reaches of the Kumbukkan river.

35. *Alcedo ispida*. Common at Lahugala, Panawa, Kumbukkan river, Kurupan-oya, and near all the wet paddy fields round Monaragala.

36. *Pelargopsis gurial*. Common on the Kumbukkan river, at Lahugala, Panawa, Okanda, Kumuna, and lower reaches of Heda-oya.

37. *Halcyon smyrnensis*. Common at Pottuvil and down the coast to Kumuna, and in all places where flowing water is present.

38. *Merops philippinus*. These migrants had already arrived, and were plentiful at Lahugala, Kumuna, and at Muduwa. In the early part of August they had reached Muppane.

39. *M. viridis*. Occurs at Ullapola, Bargura, Lahugala, Panawa, Okanda, but is scarce towards the centre of the area involved.

40. *Tachornis batassiensis*. At Pottuvil, Okanda, and Kumuna.

41. *Collocalia fuciphaga*. Abundant, and nesting at Monaragala.

42. *Macropteryx coronata*. Common at Panawa and all down the coast to the Kumbukkan. I also found it sparingly at Siyambala-anduwa.

43. *Caprimulgus helaarti*. Heard in the Kumbukkan valley.

44. *C. asiaticus*. Common down the coast from Pottuvil to Kumuna.

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45. *C. indicus*. Common down the coast from Pottuvil to Kumuna.

46. *Corvus macrorhynchus*. Common where there are inhabited villages only.

47. *Oriolus melanocephalus*. Common right to the coast.

48. *Graucalus macii*. Found at Ampitiya.

49. *Pericrocotus flammeus*. Common in the Heda-oya valley.

50. *Lalage sykesi*. Found at Muduwa, Kumuna, and plentiful up the Kumbukkan valley.

51. *Tephrodornis pondicerianus*. Heard at Pottuvil and at Lahugala.

52. *Dissemurus lophorhynus*. I suspect that this bird occurs, but not having actually shot one I include it doubtfully from Kumbukkan valley.

53. *D. paradiseus* (locally called Kudamahawaraliya) is very plentiful all through the Vedda country forest area. Unlike its relations in the Sabaragamuwa Province it does not associate with numbers of the *Malacocerci*. The following measurements of examples were obtained:—

♂ Length 17 in., tail 13 in.; wing 5·87 in., bill 1·37 in., tarsus 1 in.

♀ Length 13½ in., tail 8 in., wing 5·25 in., bill 1 in., tarsus 1 in.

54. *Bucanga leucopygialis*. Plentiful west of Siyambalanduwa.

55. *Terpsiphone paradisi*. Seen at Pottuvil, Panawa, Okanda, and in Kumbukkan valley.

56. *Hypothymis azurea*. Common. I found a nest of this species on the summit of "Westminster Abbey." It occurs comparatively sparingly in the Eastern Province.

57. *Rhipidura albifrontata*. See text.

58. *Cyornis ticheli*. Common at a place south-east of Kotiyagoda, and at Ellebubbura, Liyangolla, Etmole, and the base of "Westminster Abbey."

59. *Copsychus saularis*. Common up to the Heda-oya, but not seen east of "Westminster Abbey." Few at Lahugala, plentiful south of Pottuvil.

60. *Cittocincla macrura*. Abundant right to the coast. The local name is Sudu-waraliya.

61. *Thamnobia fulicata*. Comparatively scarce. Found breeding at Lahugala; occurs down the coast to Kumuna.

62. *Turdus spilopterus*. Heard in the high forest south of Degalhela, but nowhere else.

63. *Hypsipetes ganeesa*. Plentiful at Kotiyagoda, Heda-oya valley, Bowela, Etmole, and towards Monaragala.

64. *Iole icterica*. Common in the Heda-oya and Kurapan-oya valleys, but scarce north and east of Degalhela. Not seen west of Kodiyana.

65. *Pycnonotus luteolus*. Common right to coast.

66. *P. melanicterus*. Common in the river valleys, especially near Kumuna westwards.

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136 67. *P. hæmorrhus.* Common right to the sea.

68. *Chloropsis jerdoni.* Very scarce; only near Monaragala hills and at Pottuvil.

69. *Ægithina tiphia.* Not very common. Seen near coast line.

70. *Crateropus.* Common down the coast, but comparatively rare towards Siyambala-anduwa. I found a few at Bowela and towards Buddama.

71. *Pomatorhinus melanurus.* Heard at Panawa, Himitillangalla, round "Westminster Abbey" and Muduwa, but not in the Kumbukkan valley.

72. *Alcippe nigrifrons.* Common at Lahugala, Kumuna. Breeding near Panawa and on summit of "Westminster Abbey," extending south to the Kumbukkan valley.

73. *Pellorneum fusicapillum.* Common, but the birds from the region under consideration are distinctly paler than those from the wet districts.

74. *Orthotomus sutorius.* Common everywhere right down to the sea-side.

75. *Prinia valida.* Seen at Bowela, and in a piece of grass land at Karano. Heard at Lahugala and Okanda.

76. *Drymœca insularis.* (I am retaining Legge's species and name.) Seen only in the park lands south of Etmola.

77. *Cisticola cursitans.* Only seen at Newgalla in an abandoned field and at Panawa.

78. *Cittia frontalis.* Heard at Siyambala-anduwa.

79. *Cinnyris lotenius.* Seen at Wattegama, Siyambala-anduwa, Pottuvil, down the coast to the Kumbukkan.

80. *C. zeylonicus.* Seen all down the coast from Panawa, but few only observed near "Westminster Abbey."

81. *Dicæum erythrorhynchum.* Seen at Lahugala, Ketulana, Pottuvil to Kumuna, but becoming distinctly scarce between the Kumbukkan valley and Monaragala.

82. *Zosterops palpebrosa.* Heard at Siyambala-anduwa.

83. *Hirundo hyperythra.* Common. I found its nest at Kebilitte. It is quite plentiful at Okanda.

84. *Passer domesticus.* Not generally common. I found it at Pottuvil, Panawa, Okanda, but not at Kumuna, on the coast; again at Bowela and Nambanna (few), while it is plentiful at Etmole and Muppane.

85. *Alauda gulgula.* Common.

86. *Ploceus baya.* Near Okanda I found several trees in which the familiar pendulous nests were in abundance, but in all cases these were last year's work. I looked in vain for this bird in the northern part of the Wedirata, where I suspect it occurs when the rice fields are in cultivation, but as that is not of regular occurrence, I assume that a local migration takes place.

87. *P. manyar.* I found this species at Lahugala, where, the tank being full all the year round, both rushes and sedges are available for nesting in.

88. *Uroloncha kelaarti.* Occurs near Monaragala, but I have no notes of it eastward of that place.

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89. *U. malabarica.* Seen at Kumana.

90. *U. striata.* Common. Plentiful in the Panawa rice fields. 136
Kumbukkan valley, Wattegama, and Muppane.

91. *Artamus fuscus.* Common at Barawaya, Ellebubbura, abundant at Pottuvil.

92. *Acridotheres melanosternus.* At Panawa and near coast, and plentiful at Monaragala, Wattegama; not generally common.

93. *Eulabes religiosa.* Common up the Heda-oya valley. Plentiful at Ellebubbura, Liyangolla, and the Kumbukkan valley, down to the coast.

94. *Columba intermedia.* From a description given to me I think this bird occurs at Okanda, but personally I did not observe it.

95. *Turtur suratensis.* Common throughout the whole of the Vedda country where there is any open land; especially common in fields.

96. *Chalcophaps indica.* Common. The variability of the bearing of the tail feathers is striking.

97. *Carpophaga aenea*, locally called Godabowa, is fairly common, especially in the valleys of the larger streams, such as the Heda-oya, the Kurapan-oya, and the Kumbukkan river.

The following measurements I took from examples shot at Newgala and the Kurapan-oya, respectively:—

♂ Length 15 in., tail 5·75 in., wing 8·25 in., bill 1·25 in., tarsus 1·12 in.

♂ Length 15·25 in., tail 6·00 in., wing 8·00 in., bill 1·25 in., tarsus 0·87 in.

98. *Osmotreron bicincta.* Common right down to the coast line, especially where ripe Banyan fruit is plentiful.

99. *O. pompadora.* Common like the last, but, perhaps, more abundant.

100. *Pavo cristatus.* I did not see a single trace of Peafowl in Uva. All down the coast from Pottuvil to the Kumbukkan it is common over a belt of country varying from 6 to 15 miles in width, but these birds appear to exclude themselves from high forests.

Near Lahugala I found cock birds more plentiful than hens, and at Bargura I saw a procession of eleven cock birds walking in single file down to a pool. Hens appear to be either solitary or more shy than the males, hence their seeming rarity.

101. *Gallus lafayetii.* Exceedingly common, and, like the last, the males are seemingly more common than the females.

There is much reason to believe that this species crosses with the village fowl, but evidence as to further intercrossing is obscure, as no definite examples of connected history can be obtained from a people to whom such a subject is of no interest. In the text reference has been made to distinct strains of domestic fowls that, it may be assumed, have developed without any definite human intervention, and it is beyond demonstration to show how these strains came to be established; but whether the variation arose from the cross-breeding of domestic birds with

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136 others of their own species, or by crossing an inbred stock with the wild bird, is equally open to question.

I am inclined to believe that the inbreeding of the domestic bird has been an important factor in the forming of specific strains, and these have again been varied by the crossing with the wild bird: hence in one strain we find a distinct difference in the nest, while in another we find a close identity of general "build."

102. *Gallopordix bicalcarata*. I was able to make careful notes of the distribution of our Spur-fowl. I found it to occur at the foot of some low hills west of Siyambala-anduwa; again at the foot of Digalhella, at Danakirigalla, at the base of Westminster Abbey, near Ullapola, Nambana, Monaragala hills, Ampitiya; plentiful at Lahugala and at Kumana. This last named place is the nearest point to the sea that I have traced this species. It is remarkable that in the plains the Spur-fowl does not appear to occur unless at the base of small hills; thus, while it is common at the foot of the Lahugala hills, it appears to be absent between that point and Siyambala-anduwa, where the country is flat.

103. *Turnix taigoor*. At Kumana and in park lands near Ettnole.

104. *Erythra phœnicura*. Common where there is water. I found it at Newgalla and Watteçama, confining its movements to small tanks in each instance. Plentiful at Monaragala.

105. *Porphyrio poliocephalus*. At Lahugala tank.

106. *Totanus stagnatilis*. Common in small numbers near backwaters and pools right through the country I explored.

107. *Numenius arquata*. I found it in the neighbourhood of the sand dunes near Panawa, where it might be considered plentiful.

108. *Hydrophasianus chirurgus*. On the tank at Lahugala.

109. *Himantopus candidus*. Very numerous round shallow lagoons at Okanda and near Panawa.

110. *Lobivanellus indicus*. Common, especially in flat damp ground.

111. *Glareola lactea*. I only once met with it at Panawa, where it appeared to be very plentiful.

112. A Tern, which I take to be *Sterna media*, is common along the coast. I found it frequenting both Arugam and Okanda bays.

113. A smaller species than the last, that I presume to be *S. sinensis*, I saw at Panawa only.

114. *Nettapus coromandelianus*. Abundant at Lahugala only.

115. *Dendrocygna javanica*. Plentiful at Lahugala and Panawa tanks. Breeding near Kumana.

116. *Phœnicopterus roseus*. When I was surveying near the coast south of Panawa in March of 1907 I found a large flock of these Flamingos at one of the shallow lagoons, but on the occasion of my present visit in July I did not see a single example.

117. *Platalea leucorodia*. Seen at Okanda.

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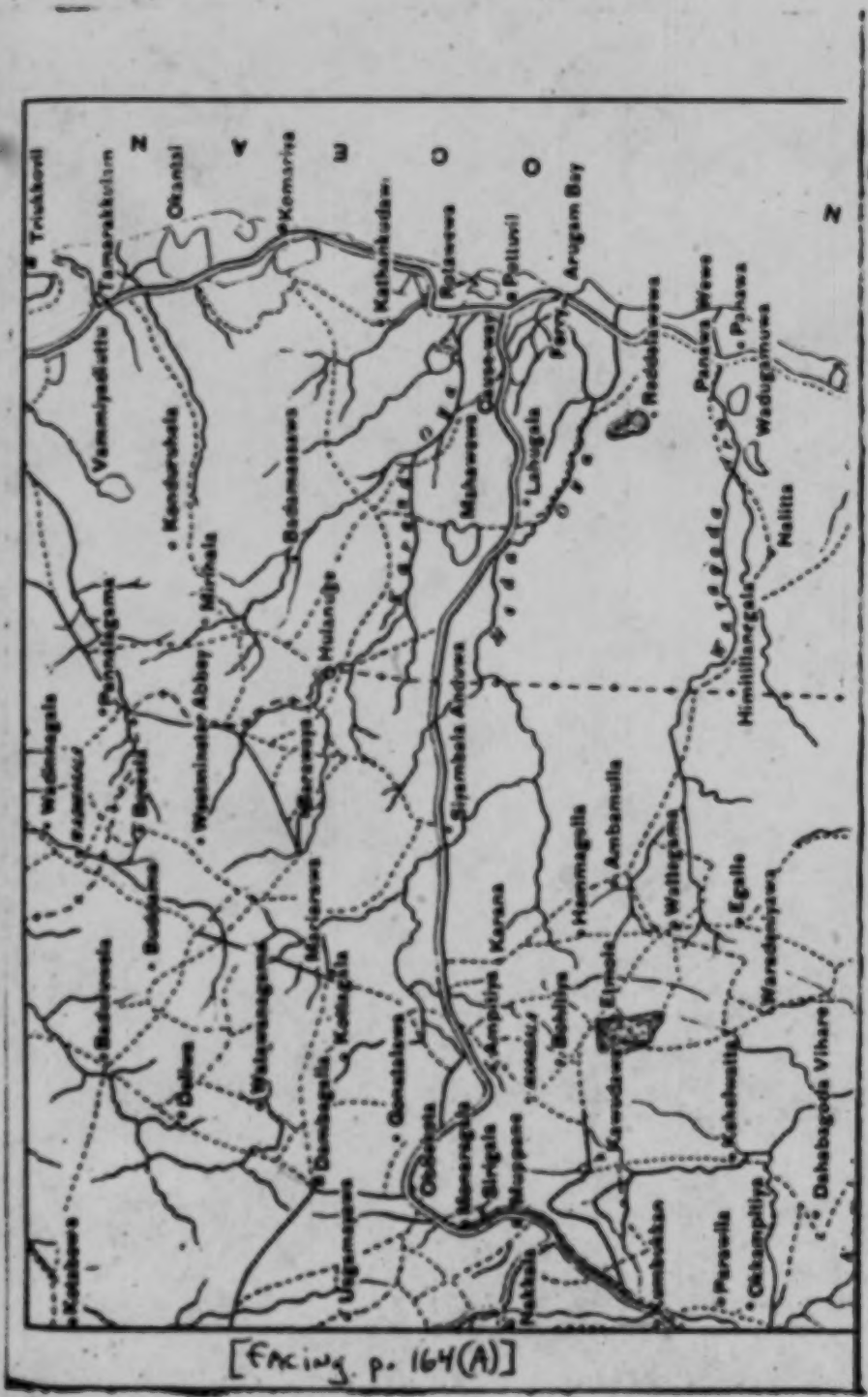
N V E D D A
N
Trikkovil
Tamarakkulam
Okanda
Komarie
Kathankudah
Batticaloa
Pottuvil
Arugam Bay
Panama
Pulmoddai
Wadugannawa
Nalanda
Himbilliyagala
Ambamulla
Walagama
Egalla
Wandalgolla
Kandaketiya
Dahabagoda Vihare
Pansala
Okkampitiya
Lahugala
Mahaweva
Siyambala Andara
Kataragama
Buttala
Wellawaya
Madulla
Badulla
Passara
Hulandawa
Minipe
Kandaketiya
Vammiyadiwatta
Wellassa
Kotiyagala
Kumbukkan Oya
Kumbukkan Aru
Ulgalla
Nakkala
Nilgala
Kumbukkan Oya
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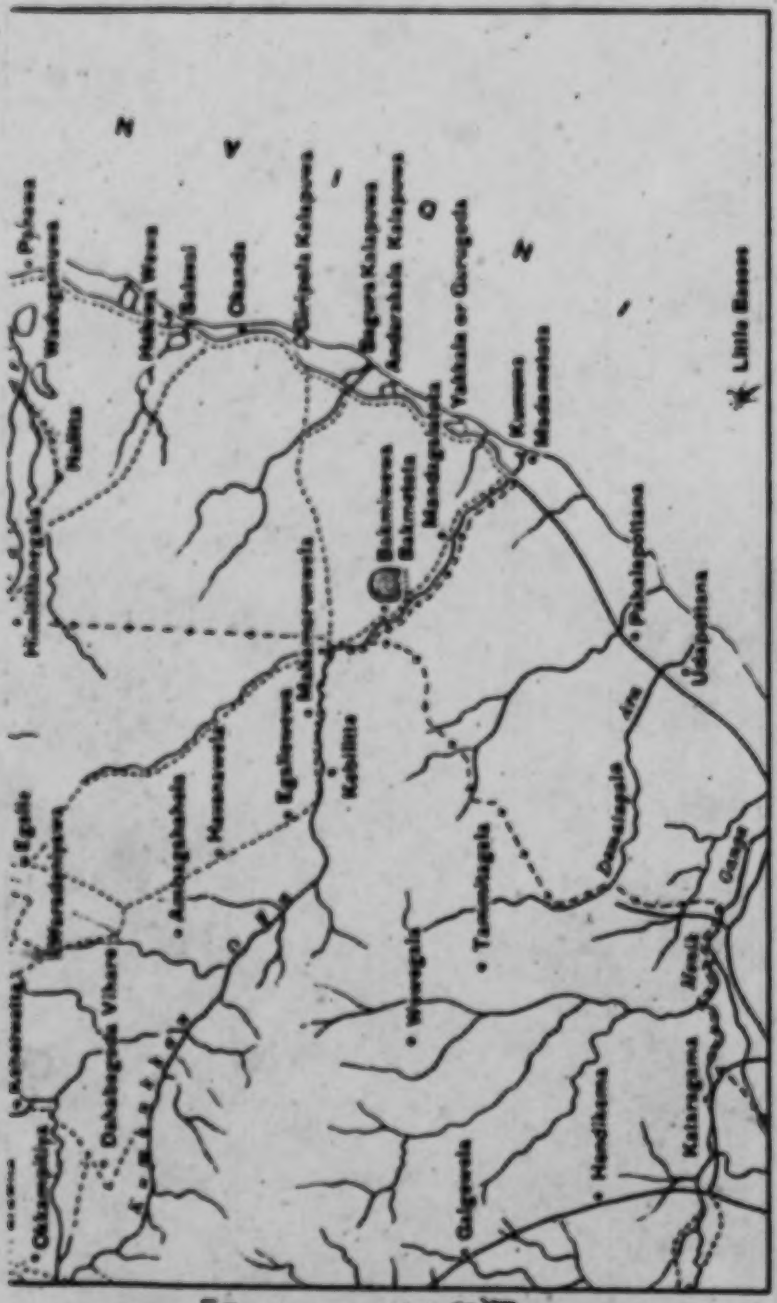

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118. *Tantalus leucocephalus*. Seen at Kumana.
119. *Anastomus oscitans*. Along the coast south of Pottuvil. Local name Gombili-kokku.
120. *Dissura episcopus*. Seen in numbers at Bargura.
121. A bird locally called "*Mâno-kokku*" was seen by me at Lahugala, but I am uncertain if it is identical with *Leptoptilus javanicus*.
122. *Xenorhynchus asiaticus*. I watched a pair at the mouth of the Kumbukkan river, seemingly feeding on fish, but I was unable to procure an example for more close identification.
123. *Ardea cinerea*. Near Panawa and at Bargura.
124. *Herodias alba*. Seen at Panawa and at Okanda, but doubtfully included here.
125. *Ardeola grayi*. Plentiful at Nowgalla, Wattegama, and in wet fields round Monaragalá.
126. *Ardetralla cinnamomea*. Only seen near wet fields near Monaragala and the margin of the tank at Wattegama.
127. *Phalacrocorax carbo*. Plentiful in Panawa and Lahugala tanks.
128. *Plotus melanogaster*. Common; often found in stagnant river pools right in the heart of the forest.
129. *Pelecanus philippinensis*. Only seen in the large "villu" at Kumana, where it is very abundant, and breeds there.